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EXAMINER	
STULTZ, JESSICA T	

ART UNIT	PAPER NUMBER
2873	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/815,884	YEH ET AL.	
	Examiner	Art Unit	
	Jessica T. Stultz	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2007 and 08 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 17-21* is/are pending in the application.

4a) Of the above claim(s) *21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 17-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *0307,0507*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Newly submitted claim 21 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons.

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-10 and 17-20, claims 1-10 are drawn to a color-changeable pixel, classified in class 359, subclass 290. Claims 17-20 are being grouped together with the pixel claims since these claims are drawn to method of making a color-changeable pixel and could be searched together with claims 1-10 without any undue burden on the examiner.

II. Claims 21, drawn to a method of making a color-changeable pixel, classified in class 359, subclass 291.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process. Specifically, the color-changeable pixel can be made by a process that does not include the steps of forming a sacrificial layer over the first electrode, forming openings in the sacrificial layer by etching the sacrificial layer, filling the openings with a material, and removing the sacrificial layer, thereby

forming a cavity between the first electrode and second electrode (as evidence in independent claim 17).

Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are independent or distinct for the reasons given above and the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 21 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Examiner's Comments

For applicant's information, the amendment to claim 17, filed October 23, 2006, overcomes the previous objection to claim 17. Additionally, the amendments to claims 1, 17, and 19, filed March 6, 2007, overcome the previous 112, first paragraph rejection of these claims. Claims 1, 17, and 19 were reviewed for prohibited new matter and support was found

within the specification and drawings for the new limitations within these claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 5, and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Susumu JP 2002-062490, herein referred to as Susumu '490.

Regarding claim 1, Susumu '490 discloses a color-changeable pixel (Sections 26-32, wherein the pixel is shown in Figure 5) comprising: a first electrode (Claims 1 and 3, Sections 10, 19-25 and 33-36, wherein the first electrode is the conductor layer formed on the bottom substrate, not labeled in Figures 4a-e and not shown in Figures 6a-e); a second electrode substantially parallel to the first electrode (Sections 19-32, wherein the second electrode is movable membrane "201" located substantially parallel to the first electrode, Figures 4a-e and 5), wherein the second electrode is movable towards the first electrode in response to electrostatic attraction between the first electrode and the second electrode (Sections 19-25 and 33-36, wherein the movable membrane "201" moves towards the first electrode in response to electrostatic actuation as shown in Figures 4a-e and 6a-e); a separation structure located between the first electrode and the second electrode and extending along a side of the color-changeable pixel (Sections 26-32, wherein the separation structure comprises the exterior supports "202" which extend along a side of the pixel as shown in Figure 5); and a plurality of supports located between the first electrode and the second electrode and inside the color-changeable pixel

(Sections 26-36, wherein the supports comprise the internal supports "202" located inside the pixel structure, Figures 5-6), wherein a restorability of the second electrode to movement relative to the first electrode is dependent on a distribution density of the supports (Abstract and Sections 13 and 26-36, wherein the ease of movement of the movable membrane "201" is dependent on the arrangement, i.e. density, of supports "202" within the pixel, Figures 5-6).

Regarding claim 2, Susumu '490 further discloses that the plurality of supports comprises a plurality of posts (Abstract and Sections 13 and 26-36, wherein the supports are posts "202", Figures 5-6) and the distribution density of the supports is a quantity of the posts per unit area (Abstract and Sections 13 and 26-36, Figures 5-6).

Regarding claim 5, Susumu '490 further discloses that the supports are grid supports (Sections 26-36, Figures 5-6).

Regarding claim 17, Susumu '490 a method of fabricating a color-changeable pixel (Sections 26-32, wherein the pixel is shown in Figure 5) the method comprising: providing a substrate (Sections 19-25 and 33-36, wherein the bottom substrate is not labeled in Figures 4a-e and not shown in Figures 6a-e); providing a first electrode over the substrate (Claims 1 and 3, Sections 10, 19-25 and 33-36, wherein the first electrode is the conductor layer formed on the bottom substrate, not labeled in Figures 4a-e and not shown in Figures 6a-e); providing a second electrode over the first electrode, the second electrode substantially parallel to the first electrode (Sections 19-32, wherein the second electrode is movable membrane "201" located substantially parallel to the first electrode, Figures 4a-e and 5), wherein the second electrode is movable relative to the first electrode in response to electrostatic attraction between the first electrode and the second electrode (Sections 19-25 and 33-36, wherein the movable membrane "201" moves

towards the first electrode in response to electrostatic actuation as shown in Figures 4a-e and 6a-e); providing a separation structure between the first electrode and the second electrode and extending along a side of the color-changeable pixel (Sections 26-32, wherein the separation structure comprises the exterior supports "202" which extend along a side of the pixel as shown in Figure 5); and providing a plurality of supports between the first electrode and the second electrode and inside the color-changeable pixel (Sections 26-36, wherein the supports comprise the internal supports "202" located inside the pixel structure, Figures 5-6), wherein the second electrode has a preselected mechanical response in response to the voltage differences, the preselected mechanical response corresponding to a set of mechanical characteristics of the plurality of supports (Abstract and Sections 13 and 26-36, wherein the ease of movement of the movable membrane "201" is dependent on the arrangement of supports "202" within the pixel, Figures 5-6).

Regarding claim 18, Susumu '490 further discloses that the second electrode comprises a flexible layer (Sections 19-32, wherein the second electrode is flexible membrane "201", Figures 4a-e and 5).

Regarding claim 19, Susumu '490 further discloses that the preselected mechanical response comprises a distance moved by the second electrode upon application of the electrostatic attraction between the first electrode and the second electrode (Sections 19-25 and 33-36, wherein the movable membrane "201" moves towards the first electrode based on applied electrostatic actuation as shown in Figures 4a-e and 6a-e).

Regarding claim 20, Susumu '490 further discloses that the set of mechanical characteristics comprises a distribution density (Abstract and Sections 13 and 26-36, wherein the

ease of movement of the movable membrane "201" is dependent on the density of supports "202" within the pixel, Figures 5-6).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3-4, 6, and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Susumu '490, as applied to independent claim 1 as shown above, in view of Yamada US 2002/0027636, herein referred to as Yamada '636.

Regarding claims 3-4, 6, and 8-10, Susumu '490 discloses a color-changeable pixel as shown above, but does not specifically discloses that the supports have a density distribution within the claimed ranges or the that the supports are made of a photosensitive material, or a non-photosensitive material, specifically polyester or acrylic resin. In the same field of endeavor of color-changeable pixels with movable electrodes, Yamada '636 teaches of a color-changeable pixel (Abstract and Section 100, wherein the LCD comprises pixels and a color display) with supports having a distribution density in a range of 400 to 2500 posts per square millimeter (Section 333) for the purpose of providing uniformity in gap between the substrates without wasting spacers (Sections 320 and 333), wherein the material of the supports comprises a photosensitive material or a non-photosensitive material (Section 310, wherein the spacers "3" are made of a thermoplastic resin, which is either photosensitive or non-photosensitive, Figures 2A-2B and 3), specifically polyester (Sections 311, wherein the supports "4" are made of

polyester resin, Figures 2A-B and 3) or acrylic resin (Section 297, wherein the support member "7" is made of acrylic resin, Figures 1 and 2A-B) for the purpose of providing supports made of a hard thermoplastic material which can be shaped as desired (Sections 110 and 297-311). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the color-changeable pixel of Susumu '490 to further comprise supports having a distribution density within the claimed ranges, wherein the supports are made of a photosensitive material, or a non-photosensitive material, specifically polyester or acrylic resin since Yamada '636 teaches of a color-changeable pixel with supports having a distribution density in a range of 400 to 2500 posts per square millimeter for the purpose of providing uniformity in gap between the substrates without wasting spacers, wherein the material of the supports comprises a photosensitive material or a non-photosensitive material, specifically polyester or acrylic resin for the purpose of providing supports made of a hard thermoplastic material which can be shaped as desired.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Susumu '490in view of Yamada '636 as applied to claim 6 above, and further in view of Yamada US 6,809,788, herein referred to as Yamada '788.

Regarding claim 7, Susumu '490 and Yamada '636 disclose and teach of a color-changeable pixel comprising spacers having a density distribution as shown above, but do not specifically disclose that the spacers are made of a photoresist. In the same field of endeavor of moveable pixels, Yamada '788 teaches of a liquid crystal display with pixels (Abstract) wherein spacers are made of a photoresist (Column 57, lines 17-25, wherein the spacers are made from a photoresist process) for the purpose of dispersing the spacers over between the substrates to form

an empty cell to be filled with liquid crystal material (Column 57, lines 17-25). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the spacers of Susumu '490 and Yamada '636 to be made of a photoresist since Yamada '788 teaches of a liquid crystal display with pixels wherein spacers are made of a photoresist for the purpose of dispersing the spacers between the substrates to form an empty cell to be filled with liquid crystal material.

Response to Arguments

Applicant's arguments with respect to claims 1-10 and 17-20 have been considered but are moot in view of the new ground(s) of rejection in view of Susumu '490 as shown above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica T. Stultz whose telephone number is (571) 272-2339. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jessica T Stultz
Examiner
Art Unit 2873
June 11, 2007